In The Claims:

Please cancel Claims 9-18.

Please amend Claim 1 as follows:

1. (Amended) A microelectronic relay comprising:

a support structure, wherein the support structure includes a continuous planar section having a first portion and a second portion;

a first contact mounted on the first portion of the support structure, wherein the first contact comprises an upper surface and a lower surface, and wherein the lower surface is adjacent the first portion of the support structure; and

a second contact mounted on the second portion of the support structure and comprising an upper surface and a lower surface, wherein at least one portion of the second contact is planar with respect to the first contact, and wherein at least a portion of the lower surface of the second contact is directly opposite from the upper surface of the first contact,

wherein a piezoelectric actuator is deposited on the upper surface of the second contact for selectively deforming the second contact relative to the first contact such that the lower surface of the second contact selectively engages the upper surface of the first contact.

wherein at least a portion of the lower surface of the second contact is directly opposite from the upper surface of the first contact,

wherein a piezoelectric actuator [coupled to the second contact,] is deposited on the upper surface of the second contact for [wherein the piezoelectric actuator selectively deforms] selectively deforming the second contact relative to the first contact such that the lower surface of the second contact selectively engages the upper surface of the first contact.

A. Amended Independent Claim 1 Is Patentable

Amended independent Claim 1 recites a microelectronic relay. More specifically, this claim recites a microelectronic relay that has a first contact and a second contact mounted on a continuous planar section of a support structure. The mounting of the first and second contacts on a continuous planar portion of the support structure minimizes the height of the structure and simplifies the construction of the microelectronic relay, as the need for additional support structures and/or mechanical connections are eliminated. Further, and importantly, this structure allows a microelectrical relay of small size to be incorporated directly into a microelectrical circuit during manufacture of the circuit. Applicant submits that neither the Kipke, Taniguchi, Kolm or Gevatter patents teach or suggest the recited combination of elements of amended independent Claim 1, and as such, amended independent Claim 1 is patentable.

U.S. Patent No. 5,286,199, to Kipke, discloses one or more piezoelectric elements arranged in a pressurized chamber filled with fluid. When a controlling voltage is supplied to the piezoelectric elements, the elements deform to displace the fluid, which in turn effects a movement of an operating element located on the surface of the fluid (see FIGs. 5 and 9). This is clearly unlike the present invention, which is a microelectronic cantilever structure having one end located opposite the end affixed to the support structure and displaced to directly engage a second contact upon the application of a voltage. On the contrary, each of the structures disclosed by Kipke include piezoelectric elements that are too large to be formed during micromachined construction as integrated microelectronic structures. More specifically, the Kipke structures rely on the displacement of water to move at least one contact, whereas the claimed invention includes contacts mounted on a continuous planar section, including a

piezoelectric element for selectively engaging a second contact upon the application of a voltage to the piezoelectric element. In sum, the relay of Kipke is relatively large in dimension, and would likely be used as a discrete component added separately to a circuit to be switched, as opposed to the present invention, which may be integrated in a microelectronic circuit.

U.S. Patent No. 4,907,123, to Taniguchi et al., discloses an electromechanical transducer relay which opens and closes using piezoelectric elements. According to the patent, the relay includes an elongate moveable contact member comprised of piezoelectric material that moves laterally in the presence of an applied voltage. The lateral movement of the elongate contact member moves a contact in a fixed relationship with one end of the elongate contact member to effect a switch (see FIG. 4b). Unlike the present invention, however, the structure of Taniguchi et al. does not include a piezoelectric actuator coupled to a contact such that the piezoelectric element and contact maintain their positional relationship and are directly adjacent to each other. Additionally, unlike the present invention, which includes a continuous planar section portion upon which both the contacts are attached, the contacts of Taniguchi et al. are located on different planes of the structure on which they are supported. This is unlike the structure of the present invention, which can be easily created during the fabrication of the microelectronic device in which it is integrated due in part to the use of contacts located on a planar portion of the substrate. On the contrary, the structure of Taniguchi et al. is intended as a component that is added on a printed wiring board (or circuit board) after construction of the circuit board (see, e.g., column 1, lines 19-27).

U.S. Patent No. 4,383,195, to Kolm et al., discloses a piezoelectric snap actuator having a piezoelectric element that drives the snap action device. The piezoelectric element is elongated and either provides sufficient force to move the snap action element towards (or away) from a fixed contact where the contact is separate from the piezoelectric element (see, e.g., FIG. 6), or moves the contact towards the snap action element, where the contact is affixed to the piezoelectric element (see, e.g., FIG. 3). Like Taniguchi et al., Kolm et al. may be distinguished from the present invention because the contacts of Kolm et al. are located on different planes of the structure on which they are supported. Requiring that the contacts be mounted on a continuous planar section of the substrate facilitates the creation of a microelectronic relay

incorporated into a microelectronic circuit. This is clearly distinguishable from the snap actuator of Kolm et al., which is a device intended for use in independently created circuits.

Finally, U.S. Patent No. 5,666,258, to Gevatter et al., discloses a micromechanical relay having a cantilevered armature that is etched out of an armature substrate. The cantilevered armature forms an electrostatic drive with respect to a base electrode mounted on a base substrate. The cantilevered armature is directed towards the base substrate and closes on the base electrode when a voltage is applied to electrodes of the armature (see FIG. 1). Although the apparatus of Gevatter et al. appears superficially similar to the present invention, the armature and a first contact associated with the armature are mounted on a separate structure than a second contact which the armature selectively engages. Unlike the device of Gevatter et al., the mounting of the first and second contacts on a continuous planar section of the support structure, as in amended Claim 1, minimizes the height of the structure and simplifies the construction of the microelectronic relay, as the need for additional support structures and/or mechanical connections are eliminated. For instance, as illustrated in FIG. 1 of Gevatter et al., the upper support structure 52, from which the armature 53 is fabricated, is not required in the presently claimed invention. As amended, another advantage of the presently claimed structure is that it facilitates the electrical connection with other planar elements or elements connected to the contacts through the board, such as through the use of vias or through-holes.

In light of the above, Applicant respectfully submits that none of the cited references teaches or suggests the microelectronic relay structure of independent Claim 1. Thus, Applicant hereby respectfully submits that amended independent Claim 1, as well as the claims that depend therefrom are patentable and request a Notice of Allowability as to these claims.

Attached hereto is a marked-up version of the changes made to the claims by the current amendment. The attached page is captions "**Version with markings to show changes made.**" It is not believed that extensions of time or fees for net addition of claims are required, beyond those that may otherwise be provided for in documents accompanying this paper. However, in the event that additional extensions of time are necessary to allow consideration of this paper, such extensions are hereby petitioned under 37 CFR § 1.136(a), and any fee required therefore

(including fees for net addition of claims) is hereby authorized to be charged to Deposit Account No. 16-0605.

Respectfully submitted,

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